

REMARKS

These remarks are responsive to the Final Office Action, dated May 29, 2008. Currently claims 1, 3-17, 19-26 are pending with claims 1, 7, and 17 being independent. Claims 2 and 18 have been previously cancelled. Claims 1, 7, and 17 have been amended. Support for these amendments is found on page 15, lines 3-10, page 16, lines 3-18, and FIG. 8. No new matter has been added.

Interview Request

Applicants respectfully request an opportunity to discuss with the Examiner the claims in the present application and the references cited by the Examiner in rejecting the claims. A copy of an interview request form (PTO-413A) is being submitted along with this response.

Applicants respectfully request the Examiner to contact the undersigned Applicants' representative with date and time that would be convenient to the Examiner to discuss the present application.

35 U.S.C. 103

In the Final Office Action, the Examiner rejected claims 1, 3-6, 17, and 19-25 under 35 U.S.C. 103(a) as being unpatentable in view of various combinations of U.S. Patent No. 5,778,395 to Whiting et al. (hereinafter, "Whiting"), U.S. Patent No. 6,560,615 to Zayas et al. (hereinafter, "Zayas"), U.S. Patent Publication No. 2003/0070001 to Belknap et al. (hereinafter, "Belknap"), and "Efficient Distributed Backup with Delta Compression" to Burns et al. (hereinafter, "Burns").

In the Office Action, the Examiner stated that Whiting discloses all elements of the claims except that it "does not teach and further configured to capture a snapshot of a set of the

shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred.” (Final Office Action, page 3). The Examiner stated that Zayas discloses this element. The Examiner further stated that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Whiting et al. by the teaching of Zayas et al., since Zayas et al. teaches ‘insertion and removal of entries in the MFL are performed by the storage system. When the first of a file’s data and metadata bits are turned on, the storage system adds the file to the MFL. In this way a file is added only once to the MFL’ (see 7:40-45)”. (Final Office Action, page 3). Applicants respectfully disagree and traverse these rejections.

Amended claim 1 recites, *inter alia*, a data protection system including a fileserver configured to contain shares of data and to be connected with a repository, wherein two or more repositories are configured to store a replica of a file, wherein a storage location and a number of replicas in each repository can be configured to change over time; the fileserver includes: a filter driver operative to intercept input or output activity initiated by client file requests and further configured to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred; a file system in communication with the filter driver and operative to store client files; the filter driver is configured to capture the snapshot at a specified time interval based on a backup frequency defined in a protection policy stored in the fileserver, wherein the protection policy is configured to be uniquely defined for each share of data on the fileserver.

In response to Examiner’s rejection, Applicants reiterate and incorporate herein by reference Applicants’ arguments submitted on February 6, 2008. In addition to the previously submitted arguments, Applicants respectfully traverse Examiner’s rejections as follows.

As understood by Applicants, Whiting relates to a system for backing up files from disk volumes on multiple nodes of a computer network to a common random-access back storage means. (Whiting, Abstract). Whiting's files are backed up from disk volumes on multiple nodes of a computer network to **a common random-access backup storage means**, typically a disk volume. (Whiting, Col. 5, lines 3-6). (emphasis supplied). This is different than the present invention's two or more repositories that are configured to store a replica of a file, as recited in the amended claim 1. (emphasis supplied). Instead, Whiting performs its backup operations to a single location only. Whiting is not equipped to store multiple replicas of a file, which is contrary to the present invention. (emphasis supplied). In fact, Whiting teaches away from storing duplicate copies of a file and instead, stores only a **single copy** of a file. (Whiting, Col. 5, lines 8-11). (emphasis supplied). Additionally, Whiting backups its data to the same location over time, i.e., its \BACKUP\USERS location (Whiting, Col. 7, lines 8-19). This is different than having to allow storage location of replicas of files to change over time, as recited in the amended claim 1. (emphasis supplied). Further, since Whiting is not capable of storing multiple replicas of files in different locations, it fails to disclose that the number of replicas stored in each repository can be configured to change over time as well, as recited in claim 1. Instead, Whiting backups a single file to a single location (i.e., Whiting's common random access backup storage means). As such, Whiting fails to disclose this element of the amended claim 1.

Further, Whiting's system creates four types of files during backup: new, unchanged, updated, and modified. (Whiting, Col. 7, lines 59-65). Each time a backup set of files is migrated, Whiting's solution searches for matching files for each new or updated file. (Whiting, Col. 8, lines 8-16). Further, during backup, Whiting creates and modifies files over network on the backup storage. (Whiting, Col. 7, lines 8-13), however, Whiting fails to disclose that these

created or modified files are replicas of a single file. In contrast, Whiting stores only a single copy of the file. (Whiting, Col. 5, lines 8-11). Further, Whiting's backup policy is the same for all sets of files, i.e., the policy looks to a set of file to determine which files fall into one of the four categories specified above. This is different than having a protection policy uniquely defined for each share of data on the fileserver, as recited in the amended claim 1. Thus, Whiting fails to disclose, teach or suggest this element of claim 1.

Hence, in addition to failing to disclose "capture a snapshot" element, as admitted by the Examiner (Final Office Action, page 3), Whiting also fails to disclose the above elements of claim 1.

As stated in Applicants' February 6, 2008 response, Zayas fails to cure the deficiencies of Whiting. As understood by Applicants, Zayas relates backup data and techniques for speeding up backup operations. (Zayas, Col. 1, lines 9-10). When Zayas creates a volume of files, a Modified Files List ("MFL") is established storing a file ID and an epoch timestamp (identifying an important point in time for the volume) is set. (Zayas, Col. 3, lines 38-40). The file ID identifies a file on the volume that has been modified since it was last archived. (Zayas, Col. 5, lines 31-34). Zayas' epoch timestamp identifies the first epoch in which the file identified by file ID was modified since it was last archived. (Zayas, Col. 5, lines 38-40). Zayas further enumerates and orders all **identified** files in the MFL that were first modified before the selected epoch. (Zayas, Col. 7, lines 16-18). (emphasis supplied). This is different than having a filter driver configured to capture a snapshot of a set of the shares of data at a particular point in time, as recited in the amended claim 1. Instead, Zayas only deals with specific identified files, i.e., only those that have been modified, rather than the entire set of shares of data, contrary to the recitation of the amended claim 1. Further, contrary to the intent of the present invention, it appears that Zayas'

intent is to deal only with modified files (rather than the entire set of files) as a way to speed up a backup. (Zayas, Col. 1, lines 9-10). Hence, the entire set of files is overlooked in Zayas.

Further, the present invention captures a snapshot of an entire file system at a specific point in time. Such snapshots are taken at specific periods of time and lists of files are maintained since the last snapshot occurred. Such occurrence is different than enumeration and capture of files since their last archive, as taught by Zayas and contrary to the recitation of claim 1.

One of ordinary skill in the art would not have combined the teachings of Whiting and Zayas in order to solve the deficiencies of Whiting. Since the references lack disclosure of, *inter alia*, a fileserver configured to contain shares of data and to be connected with a repository, wherein two or more repositories are configured to store a replica of a file, wherein a storage location and a number of replicas in each repository can be configured to change over time; the fileserver includes: a filter driver configured to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred; the filter driver is configured to capture the snapshot at a specified time interval based on a backup frequency defined in a protection policy stored in the fileserver, wherein the protection policy is configured to be uniquely defined for each share of data on the fileserver, as recited in claim 1, the combination of references fails to render claim 1 obvious.

Thus, neither Whiting, nor Zayas, nor their combination disclose, teach, or suggest all elements of claim 1, and claim 1 should be allowed.

As stated in Applicants' February 6, 2008 response, Belknap does not cure the deficiencies of the combination of Whiting and Zayas. Belknap discloses a media manager which incorporates an application program interface (API) for converting high-level generic commands

into device-level commands for output to a media device. (Belknap, Abstract). Further, Belknap determines whether a media object is located within a multimedia data storage system by searching an index of media objects stored within the system. (Belknap, para. [0063]-[0064]). Belknap discloses an audio/video file media manager. For data directed to removable storage media, Belknap's media manager tracks which audio/video file was recorded on each medium (tape, optical disk, etc.). This is similar to a conventional backup catalog function. In contrast, the present invention's location cache is configured to determine, based on the protection policy (as recited in claim 1), which repository will be used to protect each share of data, as recited in the claims (e.g., claim 3). As such, along with failing to disclose a "location cache" element, Belknap also fails to disclose, *inter alia*, a fileserver configured to contain shares of data and to be connected with a repository, wherein two or more repositories are configured to store a replica of a file, wherein a storage location and a number of replicas in each repository can be configured to change over time; the fileserver includes: a filter driver configured to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred; the filter driver is configured to capture the snapshot at a specified time interval based on a backup frequency defined in a protection policy stored in the fileserver, wherein the protection policy is configured to be uniquely defined for each share of data on the fileserver, as recited in the amended claim 1. Applicants respectfully submit that in order to render a dependent claim (e.g., claim 3) obvious, all of its elements (which include elements of an independent claim on which it depends) must be shown in the references. Belknap fails to fill missing elements in either Whiting, Zayas, or their combination.

Also, Burns fails to cure the deficiencies of Whiting and Zayas combination as well. Burns relates to constraining client-side differencing and two tape accesses for delta restore and eliminates the use of reverse delta chains. (Burns, Section 4.2). In order to update a single version in the reverse delta chain, Burns' server must store two new files, recall one old file, and perform both the differencing and reconstruction operations. (Burns, Section 4.2). However, Burns fails to disclose, teach or suggest, *inter alia*, a filter driver configured to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred; the filter driver is configured to capture the snapshot at a specified time interval based on a backup frequency defined in a protection policy stored in the fileserver, wherein the protection policy is configured to be uniquely defined for each share of data on the fileserver, as recited in the amended claim 1.

Thus, the various combinations of Whiting, Zayas, Belknap, and Burns fail to render claim 1 obvious. As such, the rejection of claim 1 is respectfully traversed. Applicants respectfully request that the rejections of claim 1 are withdrawn and claim 1 is allowed.

Claims 3-6, 17, and 19-25 are not rendered obvious by the various combinations of Whiting, Zayas, Belknap, and Burns for at least the reasons stated above with regard to claim 1. As such, the rejections of claims 3-6, 17, and 19-25 are respectfully traversed. The Examiner is requested to reconsider and withdraw his rejection of claims 3-6, 17, and 19-25.

In the Final Office Action, the Examiner rejected claims 7-16, and 26 under 35 U.S.C. 103(a) as being unpatentable over various combinations of U.S. Patent No. 6,847,982 to Parker et al. (hereinafter, "Parker"), Zayas, "Deciding when to forget in the Elephant file system" to Santry et al. (hereinafter, "Santry").

In the Final Office Action, the Examiner stated that Parker discloses all elements of claim 7 except that it fails to teach “capturing a snapshot of the set of files at a particular point in time.” (Final Office Action, page 9). It also appears that Examiner alleges that “[m]aintaining a list of modified and/or created files since last captured snapshot” is also taught by Zayas and not by Parker. (Final Office Action, page 9). The Examiner further stated that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Parker et al. by the teaching of Zayas et al., since Zayas et al. teaches ‘insertion and removal of entries in the MFL are performed by the storage system. When the first of a file’s data and metadata bits are turned on, the storage system adds the file to the MFL. In this way a file is added only once to the MFL’ (see 7:40-45)”. (Final Office Action, page 9). Applicants respectfully disagree and traverse these rejections.

Claim 7 recites, *inter alia*, a method for protecting data including storing a version of a file within a set of files on a primary disk storage system; capturing a snapshot of the set of files at a particular point in time based on a backup frequency defined in a protection policy; maintaining a list of modified and/or created files since last captured snapshot; examining the protection policy associated with the set of files to determine where and how to protect files associated with the set of files; and replicating the version of the file to two or more repositories specified by the protection policy, wherein the repositories include at least one of a local repository and a remote repository, wherein a storage location and a number of replicas of the version of the file can be configured to change over time; wherein the protection policy is configured to be uniquely defined for each set of files.

As understood by Applicants, Parker discloses an intelligent data inventory and asset management software system. (Parker, Col. 7, lines 18-23). The Parker system includes an

Akashic File Clerk that maintains an inventory database, which includes electronic signatures for every file on a work station and all new and changed files. (Parker, Col. 7, line 24-28). Parker allows a client to determine which files are critical and which are not critical, then Parker runs inventories to capture the files that have changed and forwards the changed files to an Akashic Vault for storage and processing. (Parker, Col. 7, lines 28-35). During inventories, Parker identifies files that have 1) changed since the last inventory, 2) been deleted since the last inventory, 3) been added since the last inventory. (Parker, Col. 8, lines 17-26). Parker's Akashic Vault is a computer that is attached as a node to the client's network which stores captured files. (Parker, Col. 7, lines 44-46). After capturing files, Parker's Vault generates reverse and forward deltas, then deletes the previous version and archives the newest compressed version of the file. (Parker, Col. 9, line 54 to Col. 10, line 4). Parker generates a list of forward delta(s) and copies of the new files and sends them to an offsite Library System. (Parker, Col. 10, lines 5-8). This is different than replicating the version of the file to two or more repositories specified by the protection policy, wherein the repositories include at least one of a local repository and a remote repository, wherein a storage location and a number of replicas of the version of the file can be configured to change over time, as recited in the amended claim 7.

Parker discloses how files at a client system are check-summed to determine whether their content changes over time and only those files that are new or have changed are sent to the Akashic Vault. (Parker, Col. 7, lines 24-35). However, Parker's policy is not uniquely defined for each set of files, contrary to the recitation of the amended claim 7.

Zayas fails to cure the deficiencies of Parker for at least the reasons stated above with regard to claim 1. Specifically, Zayas fails to disclose, teach or suggest, *inter alia*, capturing a snapshot of the set of files at a particular point in time based on a backup frequency defined in a

protection policy and replicating the version of the file to two or more repositories specified by the protection policy, wherein the repositories include at least one of a local repository and a remote repository, wherein a storage location and a number of replicas of the version of the file can be configured to change over time; wherein the protection policy is configured to be uniquely defined for each set of files, as recited in the amended claim 7.

The improper combination of Parker and Zayas fails to realize the present invention. The combination of Parker and Zayas results in a system that allows stamping of specific files that were identified in an inventory with a file ID and an epoch time stamp, indicating time since prior backup, so that the files can be enumerated and ordered and then their entries in a Modified File List can be removed. Clearly, this is different than what is recited by the present invention's claim 7. Specifically, the improper combination of Parker and Zayas fails to disclose, teach or suggest, *inter alia*, capturing a snapshot of the set of files at a particular point in time based on a backup frequency defined in a protection policy and replicating the version of the file to two or more repositories specified by the protection policy, wherein the repositories include at least one of a local repository and a remote repository, wherein a storage location and a number of replicas of the version of the file can be configured to change over time; wherein the protection policy is configured to be uniquely defined for each set of files, as recited in the amended claim 7.

Santry also fails to cure the deficiencies of either Parker, Zayas, or their combination. As understood by Applicants, Santry discloses a file system that keeps old versions of the file for recovery purposes (Santry, pg. 111, section 1). In some instances, Santry does not keep old versions of the files and only keeps a single current version. (Santry, pg. 113, section 3.3). However, neither Parker, nor Zayas, nor Santry nor their combination discloses, teaches or

suggests the subject matter of claim 7. As such, the rejection of claim 7 is respectfully traversed and the Examiner is requested to reconsider and withdraw his rejection of claim 7

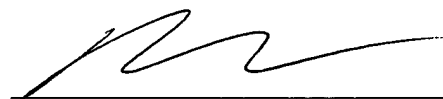
Claims 8-16 and 26 are patentable over various combinations of Parker, Zayas, and Santry for at least the reasons stated above with regard to claim 7. As such, the rejections of claims 8-16 and 26 are respectfully traversed. The Examiner is requested to reconsider and withdraw his rejections of claim 8-16 and 26.

No new matter has been added. The claims currently presented are proper and definite. Allowance is accordingly in order and respectfully requested. However, should the Examiner deem that further clarification of the record is in order, we invite a telephone call to the Applicants' undersigned attorney to expedite further processing of the application to allowance.

Applicants believe that no additional fees are due with the filing of this Amendment. However, if any additional fees are required or if any funds are due, the USPTO is authorized to charge or credit Deposit Account Number: 50-0311, Customer Number: 35437, Reference Number: 25452-013.

Respectfully submitted,

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Boris A. Matvenko, Reg. No. 48,165
MINTZ LEVIN COHN FERRIS
GLOVSKY & POPEO, P.C.
Chrysler Center
666 Third Avenue, 24th Floor
New York, NY 10017
Tel: (212) 935-3000
Fax: (212) 983-3115